

Remarks

Applicant respectfully requests reconsideration of this application. Claims 15-29 are pending, and new claims 37-52 are presented for examination. Claim 24 has been amended to correct a minor informality of a clerical nature in the preamble.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 15-20, 22-27 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Seagle (US Patent # 5,764,446; "Seagle"). Alternatively, 15-20, 22-27 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Seagle in view of Hamakawa et al. (US Patent # 4,814,921; "Hamakawa"). Claim 21 stands further rejected as being unpatentable over Seagle in view of Hamakawa, and further in view of Kitao et al. (US PAT. 6,198,600; "Kitao").

Applicant respectfully traverses each of these grounds of rejection.

Seagle discloses a magnetic head structure that includes a MR element, portion of which is exposed along the ABS surface 300 (see Fig. 3). Seagle teaches that a lapping operation is necessary to provide the ABS on the magnetic head, and that such lapping may be performed by any conventional process. (Col. 8, lines 2-12)

The Examiner agrees that Seagle fails to teach or disclose a magnetically degenerated layer formed on the side surface. Nonetheless, the Examiner considers that such a layer "can be removed during the lapping process as shown in Fig. 4." Applicant respectfully submits that the Examiner misunderstands the effect of the lapping or polishing process on the side surface of the magnetic head substrate and applies an incorrect legal standard.

As explained in the Background section of the specification, Applicants have discovered that the mechanical lapping or polishing of the ABS surface creates an

undesirable magnetically degenerated layer on the side surface. Therefore, any further lapping or polishing would do nothing to remove this layer, since the lapping or polishing of the ABS produces the magnetically degenerated layer in the first place.

Moreover, the Examiner's suggestion that Seagle somehow inherently teaches removal of any magnetically degenerated layer formed after his lapping operation, because otherwise "the magnetic head device of Seagle would not operate as intended", adds teaching to Seagle's disclosure where none exists. If formation and removal of a magnetically degenerated layer is inherently disclosed by the Seagle patent, it must be necessarily present and a person of ordinary skill in the art would recognize its presence. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citing *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991)). Inherency "may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* at 1269, 20 USPQ2d at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981)). But as Applicant discloses in his specification, the formation of a magnetically degenerated layer from polishing of the ABS was an unsolved problem in prior art composite thin film magnetic head devices at the time of Applicant's invention. In other words, the performance of prior art magnetic heads suffered precisely because polishing of the ABS degenerated the magnetic properties of the thin film MR element. Applicant's invented method is certainly not an inherent solution necessarily disclosed and taught by Seagle.

Because Seagle nowhere mentions the formation of a magnetically degenerated layer during a conventional lapping process, and because he fails to teach, disclose, or suggest removing such a magnetically degenerated layer from at least a region of the side surface that includes a component part of the thin film

magnetic head element, Applicant respectfully submits that the invention of claims 15-20, 22-27 and 29 would not have been obvious to one of ordinary skill in the art at the time it was made in view of Seagle.

With respect to the rejection based on the combination of Seagle with Hamakawa, the latter reference teaches a multilayered magnetic film in which various magnetic material layers are used to form the main pole of an inductive magnetic head for the purpose of increasing the bit density characteristics of his thin film magnetic head. (See, column 7, line 65 through column 8, line 35) Hamakawa does not teach a method of forming a thin film magnetic head which includes a MR element. Nor does Hamakawa teach the formation of a magnetically degenerated layer along the ABS surface as a result of polishing of the ABS. Rather, Hamakawa merely discloses a decrease in the soft magnetic characteristics caused by smaller thicknesses of his main inductive pole.

Hamakawa does mention a 1983 Japanese publication (No. 58-153223) in which a "degenerated layer produced at the initial state of the soft magnetic thin film formation is removed to prevent the deterioration [of the soft magnetic characteristics of the main pole material]." (See, column 9, line 1-14) However, there is no description of how this degenerated layer is formed on the main pole material or by what method it is removed. Indeed, Hamakawa disparages the method of this Japanese publication as being "applicable only to fabrication of a thin-film magnetic head of a specific [undisclosed] construction" and further that this method "is complicated with a number of steps."

Applicant respectfully contends that Hamakawa's passing mention of a degenerated layer on the main magnetic pole of a thin film magnetic head device would not have led a person of ordinary skill in the thin-film magnetic recording arts to arrive at the claimed invention at the time it was made. The reasons why include the fact that Hamakawa is directed solely to the fabrication of a multilayered

magnetic main pole element. That is, he fails to specifically teach a method for forming a thin film magnetic head element which includes "removing the magnetically degenerated layer from at least a region of the side surface that includes the MR element", for example, as per representative claim 37.

Furthermore, neither Seagle nor Hamakawa provide any teaching or suggestion of (1) how a magnetically degenerated layer is formed on an ABS of a magnetic head; and (2) what method may be utilized to overcome the performance problems caused by the formation of such a degenerated layer.

Additionally, Hamakawa's disparaging remarks regarding the thin-film fabrication process of the Japanese publication would certainly have discouraged a person of ordinary skill in the art from attempting any similar method or approach to Applicant's solution. A reference that teaches away from the claimed invention is an important indication of non-obviousness that cannot be disregarded. *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988); *See also, In re Haruna*, 249 F.3d 1327, 1335, 58 USPQ2d 1517, 1522 (Fed. Cir. 2001).

For all of the above reasons, Applicant respectfully submits that the claimed invention of claims 15-20, 22-27 and 29 would not have been obvious to one of ordinary skill in the art at the time it was made in view of the cited prior art.

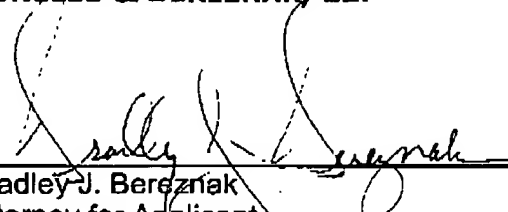
As to the claim rejection based on the combination of the Seagle, Hamakawa and Kitao references, Kitao fails to teach, disclose, or suggest any of the claimed steps or elements missing from the Seagle and Hamakawa references, as discussed above. Consequently, it is respectfully submitted that the subject matter of claims 15-20, 22-27 and 29 would not have been obvious to one of ordinary skill in the art at the time it was made in view of the combined teachings of the prior art of record.

Accordingly, it is respectfully submitted that the rejection of claims 15-20, 22-27 and 29 under 35 U.S.C. § 103(a) be withdrawn, and that all claims are now in condition for allowance.

Please charge any shortages of fees or credit any overcharges of fees to our Deposit Account No. 50-2060.

Respectfully submitted,
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Dated: 9/30, 2004


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